```
MASLRLFSTN HQSLLLPSSL SQKTLISSPR FVNNPSRRSP IRSVLQFNRK PELAGETPRI   60
.......... .......... .......... .......... MVFSTGNGNG DDNSKGLERV   20
.......... .......... .......... .......... .......... ......MNRI    4
.......... .......... .......... .......... .......... ......MARI    4

VVITSGKGGV GKTTTTANVG LSLARYGFSV VAIDADLGLR NLDLLLGLEN RVNYTCVEVI  120
IVITSGKGGV GKTTTTANLG MSIARLGYRV ALIDADIGLR NLDLLLGLEN RVLYTAMDIV   80
IVVTSGKGGV GKTTTTANLG AALARLGKKV VLIDADFGLR NLDLLLGLEQ RIVYTAIDVL   64
IVVTSGKGGV GKTTSSAAIA TGLAQKGKKT VVIDFDIGLR NLDLIMGERR RVVYDFVNVI   64
     ***** ****

NGDCRIDQAL VRDKRWSNFE LLCISKPRSK LPMGFGGKAL EWLVDALKRT PEFSPDFIII  180
EGQCRIDQAL IRDKRWKNLA LLAISKNRQK YNVTT..KNM QNLIDSVK.. .ELGFQFVLI  135
EDECTIDQAL VKDKRLPNLV LLPAAQNRSK DAINAEQMSQ ..LVEQLK.. ..DKFDYIII  118
QGDATLNQAL IKDKRTENLY ILPASQTRDK DADLTREGVA .KVLDDLK.. .AMDFEFIVC  120

DCPAGIDAFG ITAITPANEA VLVTTPDITA LRDADRVTGL LECDGIRDIK             232
DCPAGIDVGF INAIASAQEA VIVTTPEITA IRDADRVAGL LEANGIYNVK             187
DCPAGIEAGF RNAVAPAQEA IIVTTPEMSA VRDADRVIGL LEAEDIGKIS             168
DSPAGIETGF ALMALYFADE AIITTPEVSS VRDSDRILGI LASKSRRAEN GEEPIKEH    178

MIVNRVRTDM IKGEDMMSVL DVQEMLGLSL LGVIPEDSEV IRSTNRGFPL VLNKPPTLAG  292
LLVNRVRPDM IQKNDMMSVR DVQEMLGIPL LGAIPEDTSV IISTNKGEPL VLNKKLTLSG  247
LIVNRLRPEM VQLNQMISVE DILDLLAVPL IGILPDDQKI IISTNKGEPL VMEEKLSVPG  228
LLLTRYNPGR VSRGDMLSME DVLEILTIKL VGVIPEDQSV LRASNQGEPV ILDINA.DAG  237

LAFEQAAWRL .VEQDSMKAV MVEEEPKKRG .FF.SFFGG       Arabidopsis    328
IAFENAARRL IGKQDYFIDL TSPQKGMFQK .LQE.FFLGEE     Chlorella      286
LAFQNIARRL EG.QDIPFLD FMAAHNTLLN RIRRRLLGG       Synnechocystis 266
KAYADTVERL LGEERPFR.. FIEEE.KK.G .FLKRLFGG       E. coli        271
```

FIG. 1

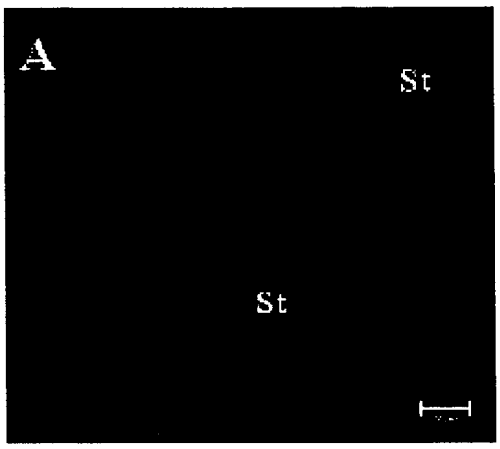


FIG. 2A

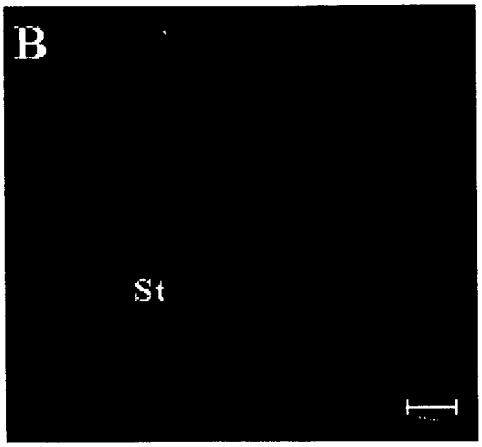


FIG. 2B

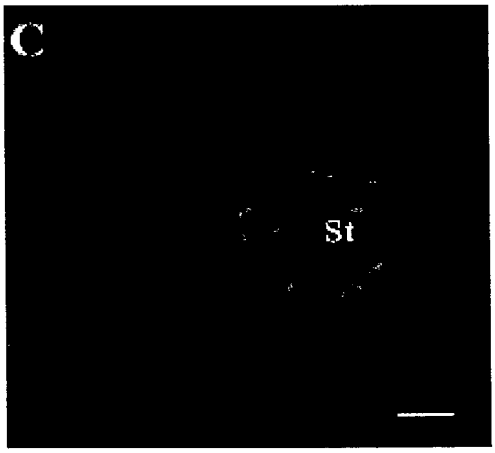


FIG. 2C

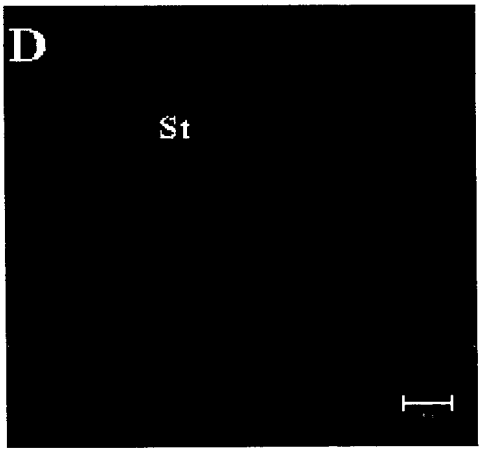


FIG. 2D

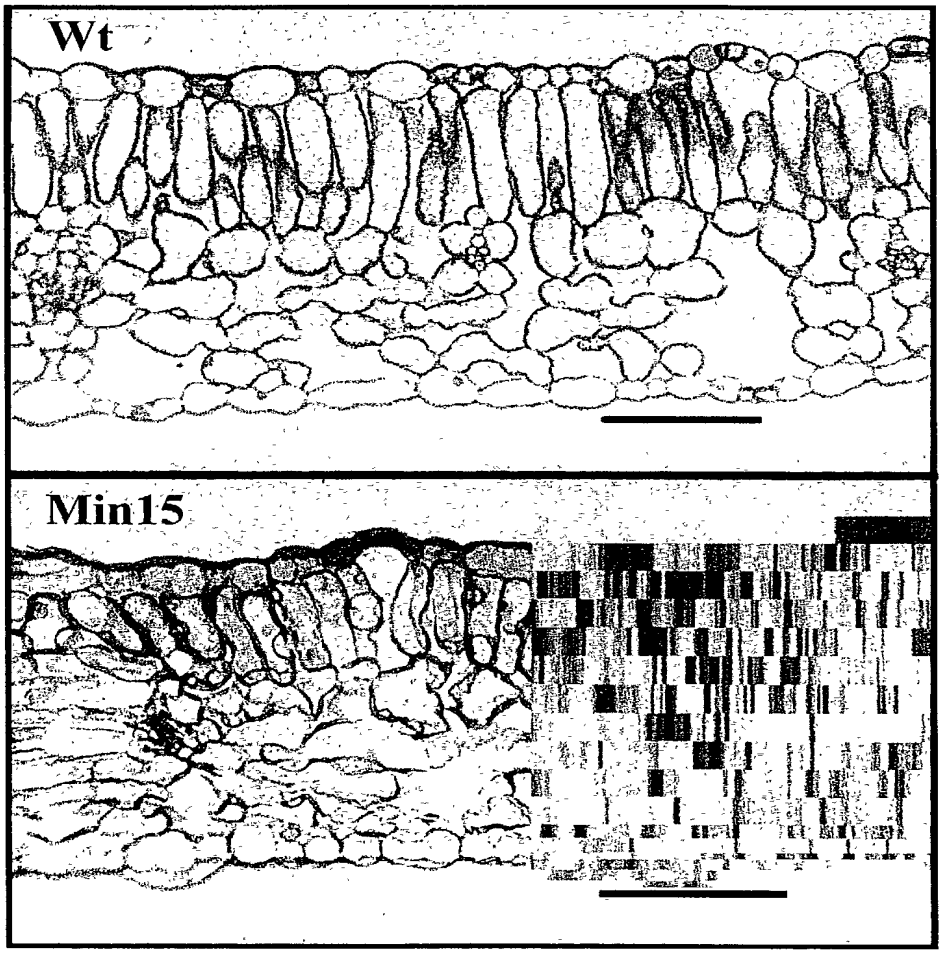


FIG. 3

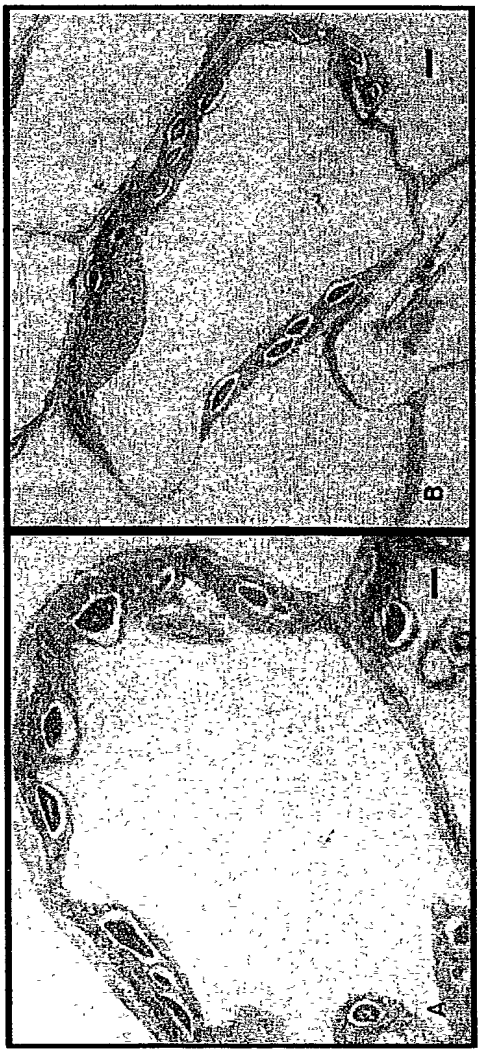


FIG. 4B

FIG. 4A

FIG. 4D

FIG. 4C

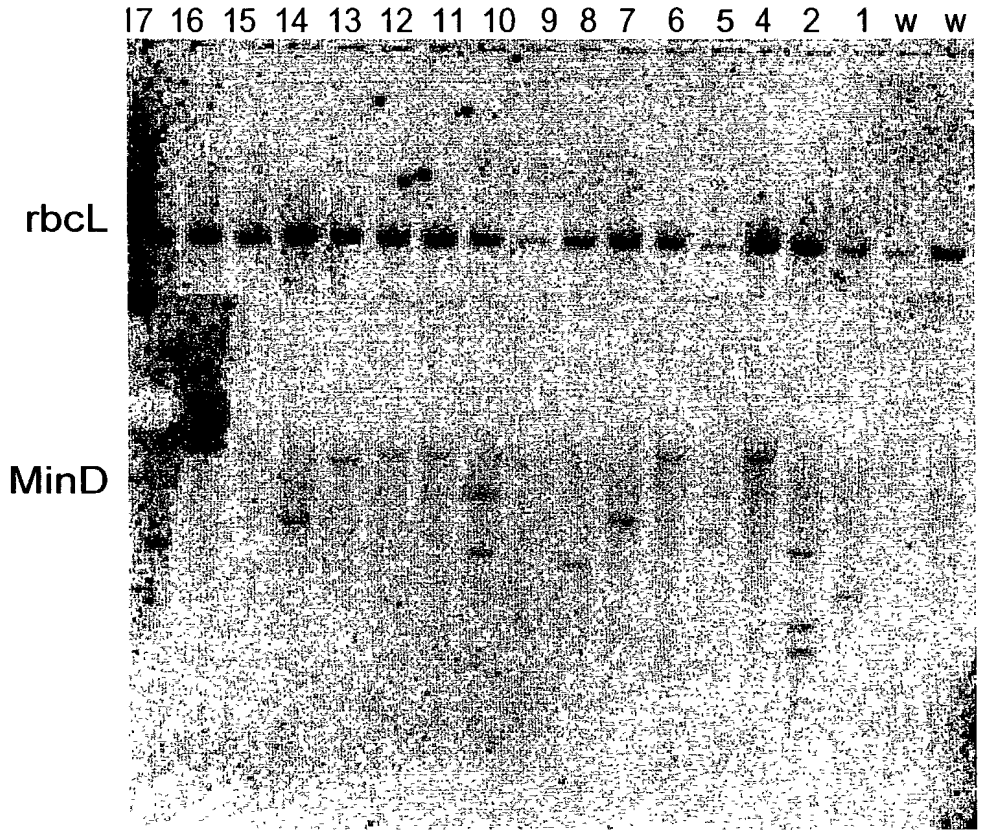


FIG. 5

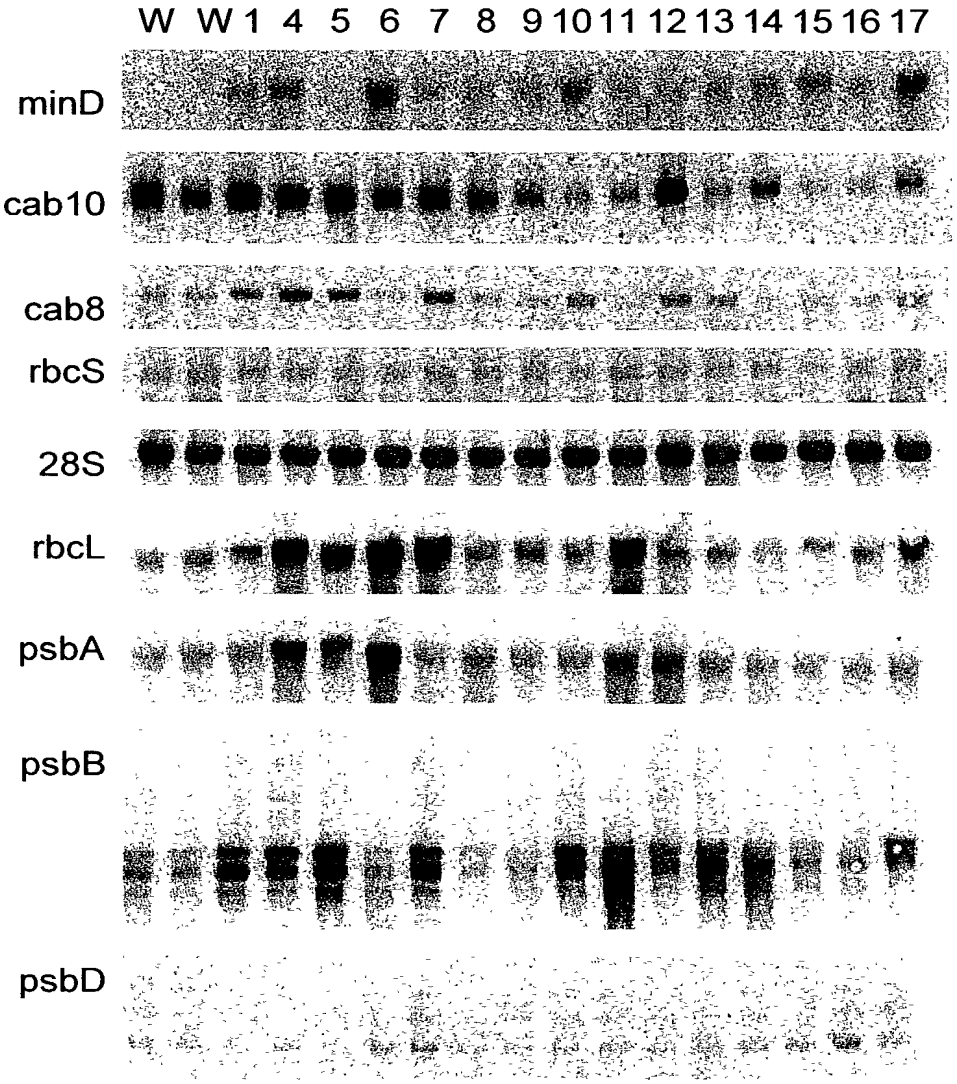

W W1 4 5 6 7 8 9 10 11 12 13 14 15 16 17
minD
cab10
cab8
rbcS
28S
rbcL
psbA
psbB
psbD

FIG. 6

	Chlorophyll Content		Fluorescence Measurements		
Line	Total Chl (ug/mg)	Chla/b (ratio)	Fo (relative units)	Fm (relative units)	Fv/Fm (relative units)
WT	1.99	3.11	137.4±12.0	616.6±34.0	0.777±0.015
AtMin 4	1.71	2.64	135.7±11.8	636.2±27.1	0.787±0.017
AtMin 5	1.58	3.01	136.5±17.1	534.9±66.1	0.757±0.020
AtMin 8	1.46	3.07	128.5±32.3	489.9±78.6	0.741±0.037
AtMin 9	1.66	3.00	125.5±19.9	520.5±58.3	0.759±0.018
AtMin 10	1.53	2.95	136.5±11.3	543.1±14.3	0.748±0.025
AtMin 17	1.44	2.71	139.5±20.6	564.9±32.7	0.756±0.032
WT	1.69	3.08	105.6±14.9	441.9±58.5	0.760±0.016
AtMin 1	1.74	2.80	126.4±08.6	436.7±27.2	0.714±0.035
AtMin 12	1.60	3.11	123.4±16.6	455.3±84.4	0.724±0.040
AtMin 13	1.91	3.28	115.9±17.9	441.5±64.5	0.737±0.011
AtMin 14	1.59	3.07	113.6±17.2	444.1±58.2	0.743±0.017
AtMin 15	1.59	2.94	119.1±19.5	433.0±45.9	0.724±0.037
AtMin 16	1.71	2.89	122.1±10.7	447.7±41.0	0.725±0.019

The measurements were taken over two days, and due to variation in the F_O and F_M measurements these were kept separate. Fluorescence measurements are averaged from eight samples.

FIG. 7

```
Syne     1                                                                                           0
Guill    1                                                                                           0
Ecoli    1                                                                                           0
Pseudo   1                                                                                           0
Neiss    1                                                                                           0
Chlorel  1                                 MATLLQQGTFAPHRSWSGRKGTRRVSKPTLNRLHVRSSSKAGAGPVSD         48
AtMinE   1    MAMSSGTLRISATLVSPYHHHHRNRLSLPS▼SSSK▼VDFTGFISNGVNSLETQKCTPGLAISRENTRGQVKVLARNTGD       77

Syne     1                                MILELIERLFSRSG---KNSGEDARRRLKLVIANDRSGL--SPEMMEEMRREI    48
Guill    1                                MITEFFERLFLSN----KGSREDVKRRLKLVLAHDRSTL--NASTLEKMREEI    47
Ecoli    1                                  MALLDFFLSRK----KNTANIAKERLQIIVAERRRSD-AEPHYLPQLRKDI    46
Pseudo   1                                  MSLLDFFRSRKS---QNSASIAKERLQIIVAHERGQR-AQPDYLPQLQKDI    47
Neiss    1                                  MSLIELLFGRK----QKTATVARDRLQIIIAQERAQEGQTPDYLPTLRKEL    47
Chlorel  49   AHLAH--LRNAGHPVPEAPGLQGFVAKLKAAWQIFFPEKPPV-LTPKDEGKNRLRMILVADRCGI--TPDSLTGMRESI   122
AtMinE   80   YELSPSPAEQEIESFLYNAINMGFFDRLNLAWKIIFPSHASRRSSNARIAKQRLKMILFSDRCDV--SDEAKRKIVNNI   154

Syne     49   VEVVSRYVEID-PGEMEFSLESD-QRMTALIANLPVRRVR------------RTKAKSEAQES                 97
Guill    48   LLVVSKYVELD-TDSLEFSIRTD-SKMTALIANLPIRRIL------------KDI                         88
Ecoli    47   LEVICKYVQID-PEMVTVQLEQKDGDISILELNVTLPEAE------------ELK                         88
Pseudo   48   LEVIRKYVPID-QEQIQVELENQ-GNCSILELNITLPDR                                         84
Neiss    48   MEVLSKYVNVS-LDNIRISQEKQDG-MDVLELNITLPEQK------------KV                          87
Chlorel  123  VQAVSAYVDIETEEEIEVNLSTDPELGTIYSVAVPVRRVKSRRIGGVDTSEDGKIIVKWDPKDPNSDPSDQFPFGV   198
AtMinE   157  IHALSDFVEIESEEKVQLNVSTDGDLGTIYSVTVPVRRVKP-EYQDVDEAGTITNVEYKDTRDGSVDVRFDFYVPE   229
```

FIG. 8

FIG. 9A

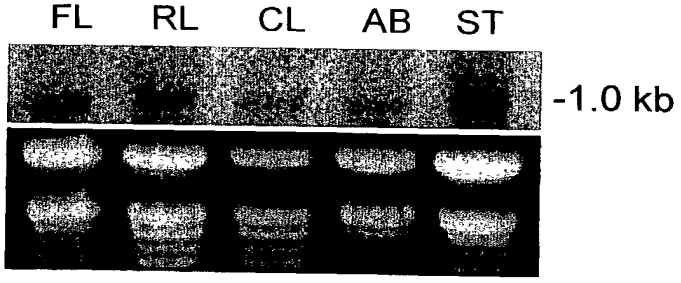


FIG. 9B

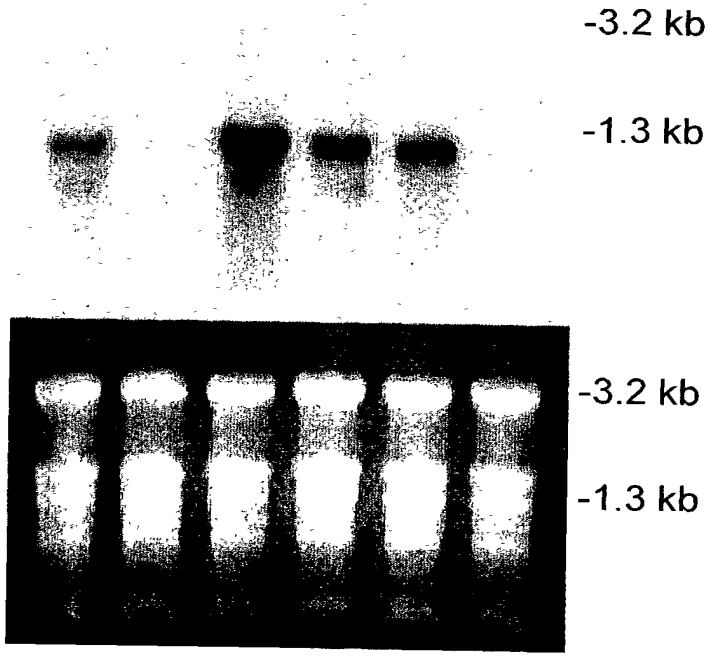
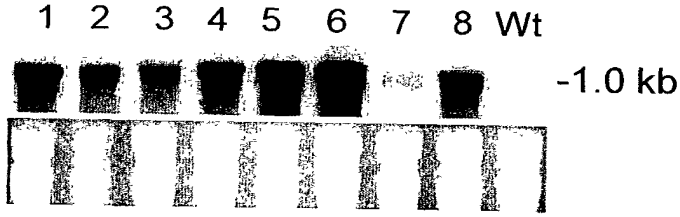


FIG. 9C



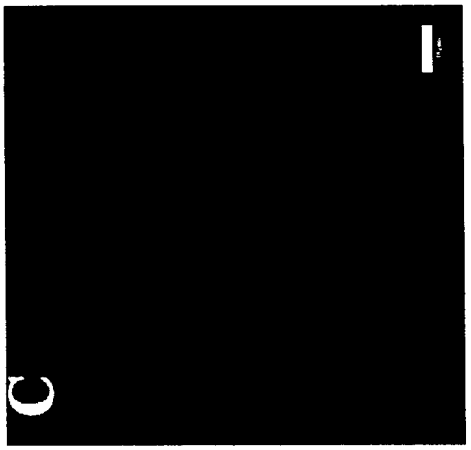


FIG. 10C

FIG. 10B

FIG. 10A

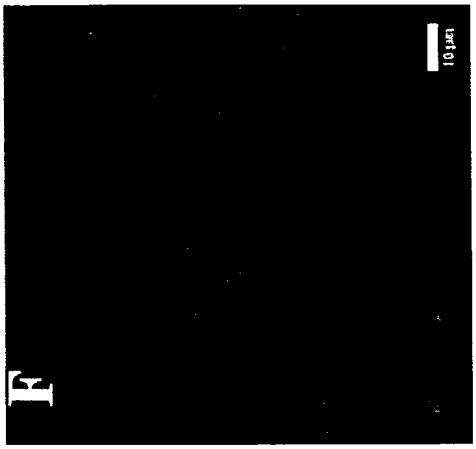


FIG. 10F

FIG. 10E

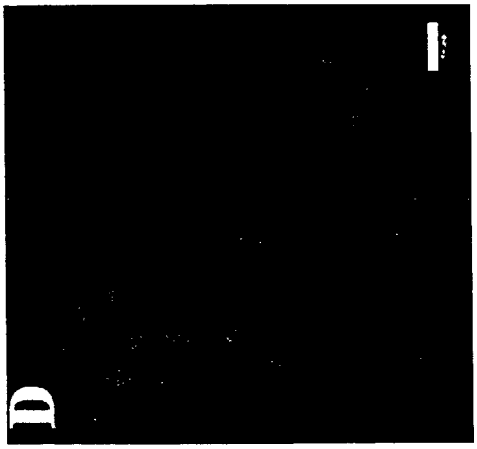


FIG. 10D

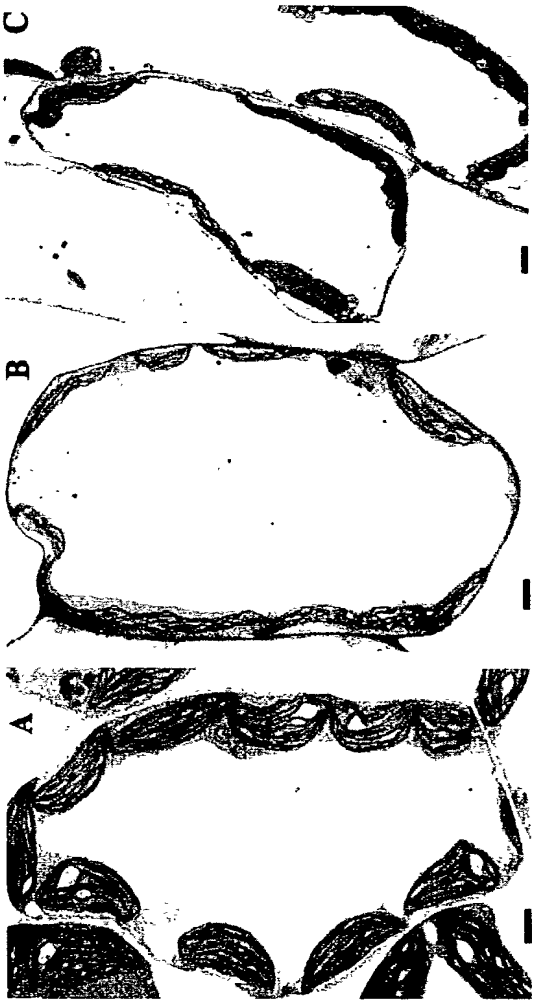


FIG. 11C

FIG. 11B

FIG. 11A

FIG. 11F

FIG. 11E

FIG. 11D

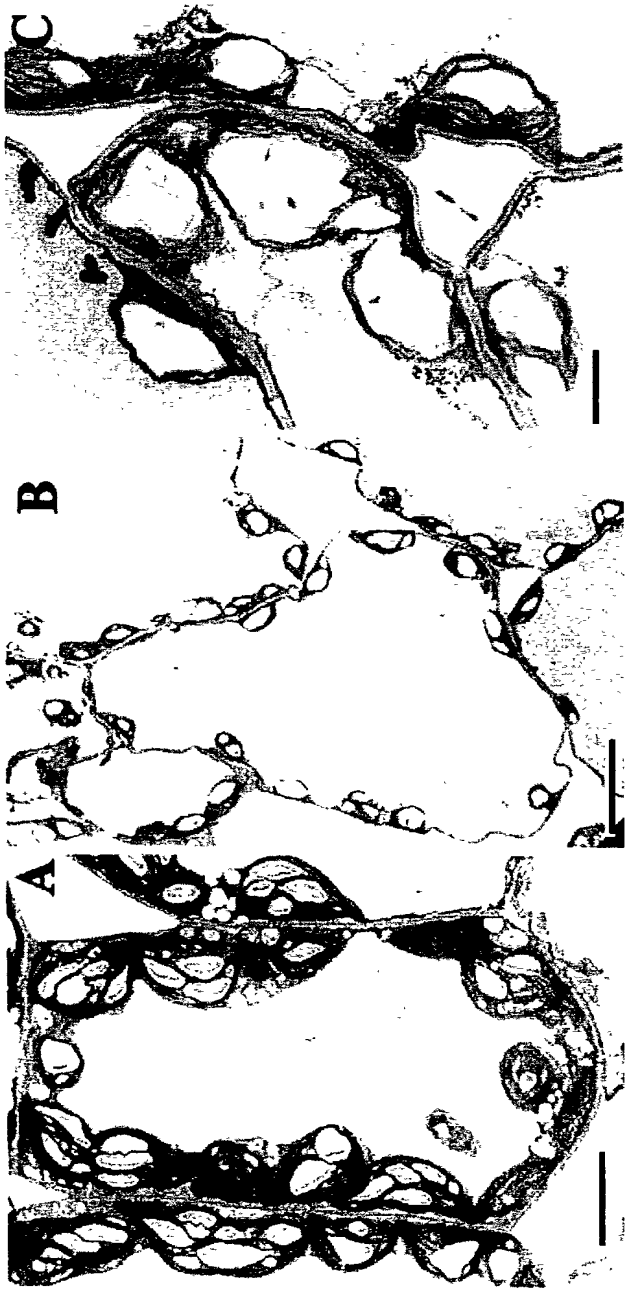


FIG. 12C

FIG. 12B

FIG. 12A

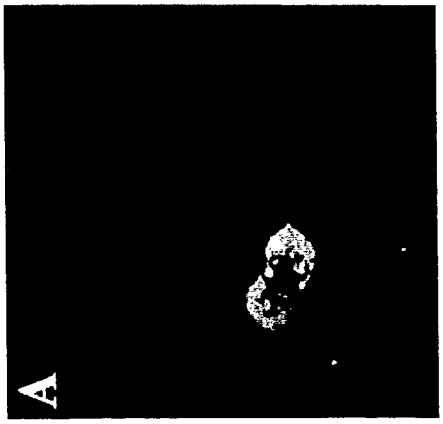


FIG. 13A

FIG. 13B

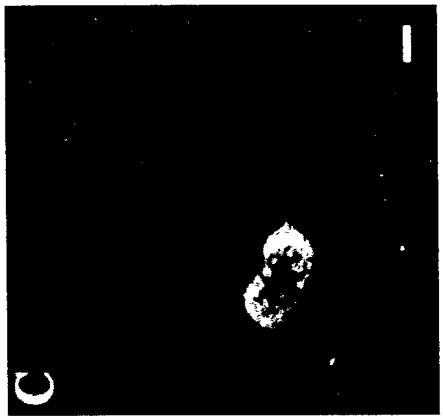


FIG. 13C

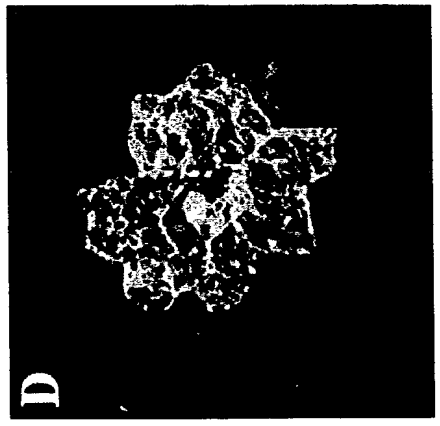


FIG. 13D

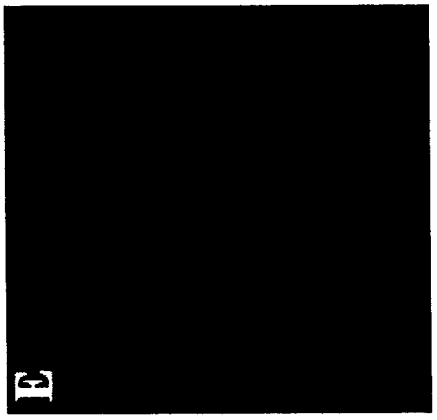


FIG. 13E

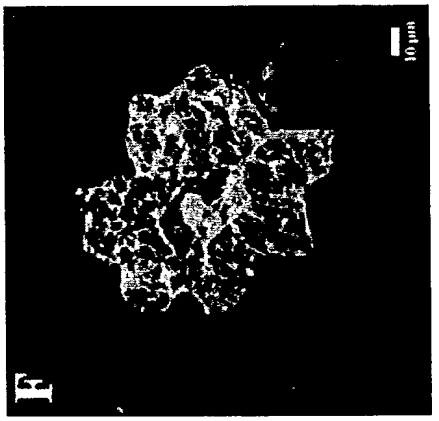


FIG. 13F